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Soil&Water Conservation News

Steps Taken to Assure Safe Dams

by Paul M. Howard

Dam safety became a national issue on June 5, 1976, when the 305-foot-high Teton Dam in Idaho collapsed, killing more than 10 people and costing the Federal Government up to a billion dollars to replace the dam and pay damage claims. The Teton Dam collapse was the seventh of eight major dam failures since 1963. In the most recent major dam failure, the Kelly Barnes Dam in Georgia collapsed during a heavy rain and flooded the Toccoa Falls College campus, killing 39 people.

Because of the Teton Dam collapse, all Federal departments involved with dams prepared the "Federal Guidelines for Dam Safety," which were published in 1979. Congress provided funds for a previously authorized U.S. Army Corps of Engineers dam inventory and inspection program.

Of the more than 66,000 dams in the United States today, the Corps of Engineers will inspect all privately owned dams that could cause loss of life if they fail. As of January 1, 1981, the Corps of Engineers had inspected 6,119 dams. It declared 1,971 of these dams unsafe and declared 103 dams "emergency unsafe," so unsafe that they had to be repaired or taken out of service immediately.

The Corps has inspected 1,229 of the more than 23,000 dams in the Nation built with assistance from the Soil Conservation Service (SCS), and declared 299 unsafe.

The problem with most of the dams declared unsafe is that they were designed for unpopulated rural areas that have since been settled. The main reason for this classification is that the emergency spillways, which channel floodwaters around rather than over dams, are too small for dams that could threaten the lives of the people who now live downstream.

The Corps of Engineers sends reports of unsafe dams to the State Governors involved. The Governor usually informs the dam owner or sponsor that the dam is unsafe.

To comply with the Federal Guidelines for Dam Safety, SCS plans to see that 5,000 dams receive a safety inspection at least once every 5 years. SCS may also provide any requested technical assistance to dam owners and sponsors to make dams safe and help State agencies develop dam safety laws and programs. North Carolina, Georgia, California, and Pennsylvania have already developed effective dam safety laws.

California and Pennsylvania also require maps of the potential flooded areas for all dams in their States, to help local officials and dam owners develop emergency evacuation plans. SCS provides technical data for these maps.

SCS is preparing a brochure to inform dam owners and sponsors about the importance of dam safety. Together with the U.S. Army Corps of Engineers and the Federal Emergency Management Agency, SCS also contracted with the National Association of Conservation Districts to develop a slide show to inform the public about dam safety.

SCS wants dam owners and sponsors to understand their potential liability for failure of an uninspected dam. If it fails, the owner would be in a situation similar to that of the person whose improperly maintained car causes an accident at a street intersection when the brakes fail. But a dam failure could kill many people and cost many millions of dollars in damages.

Paul M. Howard,
deputy chief, Technology Development and Application, SCS, Washington, D.C.

Dam Data in Computer

So that the Soil Conservation Service can properly manage its dam safety program, it is developing a detailed inventory of SCS-assisted dams. SCS is using the Corp's inventory data and data from other available records.

The data will be stored at the Fort Collins Computer Center in Colorado and will include information on the physical characteristics of each dam—including its height and the size of its emergency spillway—the distance from the dam of the nearest downstream town, and current hazard classification.

Data for each dam will be updated as needed and data will be added as new dams are built.

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Seven Watershed Projects to Receive Planning Assistance

The U.S. Department of Agriculture recently approved seven new watershed applications for planning assistance in Montana, Oregon, Georgia, South Carolina, Oklahoma, Wisconsin, and Washington.

Under the Watershed Protection and Flood Prevention Act of 1954, USDA's Soil Conservation Service will give technical assistance to local sponsors of the seven projects to protect the watersheds from erosion and siltation and help prevent flooding.

The Wolf Creek watershed in Montana covers 158,000 acres and is the largest of the seven new watershed projects. The town of Denton in the Wolf Creek watershed has a history of severe flooding.

In Oregon's Mt. Hood Irrigation District watershed, the problem is inefficient farm irrigation systems. Georgia's Beaver Creek watershed has problems with excessive gully and sheet erosion.

The Cartwheel Community watershed in South Carolina has cropland flooding and in Oklahoma, the Campbell Creek watershed has flooding and erosion problems.

Cattle are polluting streams and contributing to streambank erosion in the Upper Sugar River watershed in Wisconsin and in the Johnson Creek watershed in Washington.

Solutions to these types of watershed problems may involve building a dam or waterway, installing efficient irrigation systems, or installing agricultural waste management systems. SCS has built nearly 9,000 watershed project dams in the United States. Since 1954, SCS has approved 1,229 watershed projects and has authority to approve 25 new watersheds for assistance in fiscal year 1981.

The watershed program provides Federal technical and financial assistance to local units of government to solve their water resource management problems.

Integrated Crop and Livestock Systems Are an Alternative for U.S. Dryland Farmers

"The United States needs to begin looking at crop rotations of small grain and legume-grass pasture in dryland farming areas," says Gerald Darby, Soil Conservation Service national agronomist. Darby attended the International Dryland Farming Congress in Australia last fall, and he says that legume-grass pasture and grain crop rotations, which are common in Australia, could also work in the subhumid and semiarid parts of the Great Plains Region of the United States.

Dryland conditions are prevalent in Australia and farmers there are using grain and pasture rotations to make the most of available moisture, increase soil nitrogen, improve soil structure, minimize disease and pest buildup in cereal crops, increase livestock production, and increase grain production.

"Until recently, it has been more economical for U.S. farmers to apply nitrogen fertilizer than to rotate grain and legume crops," says Darby. "But with rising energy costs forcing up the price of nitrogen fertilizer, use of this integrated cropping system will be good for the farmer and good for the soil."

The International Dryland Farming Congress was cosponsored by the South Australian Department of Agriculture and the Agricultural Technologists of Australasia. The congress was the first of its kind to focus on integrated crop and livestock production in semiarid regions of the world. Darby and Arnold Davis of the SCS South Technical Service Center in Fort Worth, Tex., coauthored a paper, "Forage Legumes for Subhumid and Semiarid Zones of the Southern Great Plains," for submission to the congress.

Nancy M. Garlitz,
associate editor, *Soil and Water Conservation News*, SCS, Washington, D.C.

DC's From Southern Cities Meet

Nineteen Soil Conservation Service district conservationists (DC's) assigned to southern cities with a combined population of 11 million met in Memphis in mid-February to explore more effective ways to help city people apply soil and water conservation.

They also discussed their "secondary mission" of explaining to urban people that their food bills, their health, and their future well-being are linked to the condition of America's soil and water resources.

The urban DC's agreed that the large number of people in their districts make one-on-one assistance impractical, if not impossible. Most said that they get their work done partly through contacts with county and municipal agencies, including planning and zoning commissions and boards of education.

John R. Block
Secretary of Agriculture

Norman A. Berg, Chief
Soil Conservation Service

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From the SCS Chief

The failures of the Teton Dam in 1976 and the Toccoa Falls dam in 1977 focused much attention on dam safety. In response, the Soil Conservation Service and other Federal agencies worked together on establishing guidelines, which were published in 1979, for increasing the safety of dams. The guidelines call for changes in inspections, reviews, and inventories and in the organization and management of dam safety programs. (See article on page 1.)

Assuring the safety of structures, especially those that could cause loss of life if they fail, will take more SCS expertise, more reviews, and more time in the future. Our record so far is good. But that does not mean that extra caution is not required.

Legally, the owners of dams are liable for assuring that their dams are safe and, if a failure should occur, for any damages. This might seem to indicate that SCS should not be concerned with the safety of a dam once it is installed.

Our cooperators and sponsors trusted SCS to plan, design, and oversee construction of their dams. They expect us to continue our assistance and support in assuring that their dams remain safe. The inspection and maintenance of a dam is required the same as the followup on any conservation practice. The big difference is that often the protection of lives and property depends on the safety of a dam. Therefore, we intend to be involved in this activity and to work to insure that a dam safety program is initiated and carried out in every State.

SCS has assisted with more than 23,000 dams over the years. The owners and SCS share the concern for the safety of these dams. Our procedures and practices must reflect this concern and the responsibilities that go with it. This does not mean that SCS will do it all. On the contrary, we believe that State dam agencies should ultimately assume the role and responsibility for dam safety inspection, and we will be working to encourage this action.

They also work with environmental and service organizations and business groups of realtors and homebuilders to get their message across.

All spend more time with communications media than do their rural counterparts.

"It makes much more sense," said one DC, "to get a story on wet soils in a newspaper with a circulation of 100,000 than to try to work directly with half a dozen homeowners. We have to find ways to multiply the impact of everything we do."

Several said that they occasionally become embroiled in controversial local issues, but that in such cases they try to maintain their role as purveyors of technical information rather than advocates of a particular cause or course of action. But they added that this is not always possible.

Most DC's recommended that urban districts sponsor conservation tours for elected and appointed officials to acquaint them with the range of soil and water problems—and solutions—experienced in urban communities today.

The 4-day meeting, sponsored by the South Technical Service Center, was the first ever held by SCS exclusively for city-based DC's.

Hubert W. Kelley, Jr.,
director, Information and Public Affairs, SCS, Washington, D.C.

Agricultural Productivity and the Retention of Agricultural Land

by Norman A. Berg,
Chief of the Soil Conservation Service,
U.S. Department of Agriculture

The Decline in Productive Farmland

Concern over the decline in productive farmland is increasing nationwide and worldwide. In the Soil Conservation Service our primary focus is on any loss of agricultural productivity due to:

- Excessive topsoil erosion and other soil degrading actions;
- Too much water (flooding) or too little (drought) that cause crop losses or damage to the land; and
- The continuing conversion of important farmlands to nonagricultural uses.

To many, the concern about agricultural productivity may seem premature—even unwarranted—because this Nation has dramatically expanded agricultural productivity since World War II. There is no question that we have been blessed with the largest body of prime farmland and the most favorable climate for growing crops in the world. I believe, however, the Nation has finally learned—and it has been the hard way—that these land and water resources, although abundant, are finite and fragile and do need continuing care.

Therefore, specialists in a number of agricultural fields now are expressing concern over the nature and magnitude of current and prospective losses in agricultural productivity.

These losses stem in part from reductions in the quantity and the quality of the Nation's land resource base.

The driving forces behind the loss of agricultural productivity are many and they are complex. The National Agricultural Lands Study pointed to a number of factors that apparently dampened productivity growth during the last decade, including:

- The rising costs of fuel, fertilizers, and other energy intensive inputs;
- Less fertile agricultural land available for cropland uses;
- Lack of reserve supplies of water to sustain past growth rates in irrigated agriculture; and
- The loss of natural soil fertility due to erosion and salinization.

Therefore, after four decades of agricultural surpluses, U.S. agriculture has moved away from underused production capacity. The principal underlying forces have been a gradual overall decrease in the rate of annual productivity gains and a dramatic increase in foreign demand for U.S. agricultural products.

In the past, many adverse effects of soil erosion on land productivity have been masked by other factors. One of the most dangerous characteristics of the soil erosion-productivity problem is the difficulty of detection. Losses by erosion occur slowly and may not be recognized until the land is no longer economically suitable for growing crops.

The quality of our soil is declining because our farmland loses over 5 billion tons of topsoil to sheet, rill, and wind erosion annually. Another billion tons wash away in gully, roadside, streambank, and construction site erosion.

We also know that each year over 2 million acres of agricultural land are converted to urban, built-up, transportation, and water uses. About 700,000 acres are prime and other important farmlands.

If present land use trends continue, Florida—producer of half the world's grapefruit and one-fourth of the world's oranges—may lose its prime and unique farmland in about 20 years. There will still be farmable land, but it will be of poorer quality than the important farmlands now in agriculture.

Any decline in the quality or quantity of the cropland base puts pressure on the remaining farmland—it is then utilized more intensively.

Other recent trends also have contributed to the decline in productive farmland. There are increasing numbers of people moving to rural areas—not necessarily to farm, but to escape congestion, pollution, and other drawbacks of urban living. This means more roads, utilities, schools, and service areas.

It also means a shift in the balance of political power, and farming may not be tolerated if it bothers the farmer's new neighbors. In addition, demands for households increase and there are more young adults, more senior citizens, and more single parent families. Many of these households exist on larger plots of land than the typical suburban quarter or half-acre.

The number of households in nonmetropolitan areas increased by more than 4 million between 1970 and 1977.

Americans also are moving to the rapidly industrializing South. Between 1970 and 1975, more than 1.5 million people migrated South.

But loss of important farmlands is not our country's only natural resource concern. Agriculture is the Nation's biggest user of water, accounting for nearly 83 percent of our total water consumption. Our

large ground water resources are being depleted in some areas at a rate of 21 billion gallons a day, with no recharge taking place. In some areas of Arizona, ground water levels are falling 7 to 10 feet a year.

The quality of our water is another growing problem area. Soil erosion increases the levels of sediment, infectious agents, nutrients, and pesticides in our streams. Irrigation return flows generally increase the level of dissolved solids, nutrients, and pesticides. And irrigation also is responsible for increased salinity as water seeps through the soil and picks up salt from the underlying mica shale deposited on ancient sea beds.

Flooding on land adjoining rivers, streams, and lakes is another concern. About 54 million acres of our prime farmlands are in flood-prone areas.

Flood damages to cropland and pastureland, urban land, and other properties totalled a little over $1.7 billion in 1975. The estimated figure for the year 2000 is about $2.3 billion.

These are some of the challenges to the wise use of America's agricultural land and water.

Nationwide Land Use Efforts

There are several broad, nationwide efforts going on that have a bearing on this whole question of land and water use.

The U.S. Department of Agriculture's land use policy dates back to 1973 when Secretary Earl Butz issued Memorandum 1827. This asked every USDA agency to make special provisions in its programs and services for the recognition and retention of prime agricultural lands.

Two years later, a task force of the Department's land use committee planned and conducted a national seminar on the Retention of Prime Lands. The 80 participants concluded:

"The continued conversion of prime production lands to other land uses is a matter of growing concern that will require a great deal of attention in the future. . . . Extreme caution should be exercised in approving actions that result in irreversible conversions of prime farmlands to other uses. In some States, problems must be faced now or significant options for the future will be closed. USDA should be concerned with any actions that will diminish the Nation's ability to produce food, fiber, and timber."

In 1976, the chairman of the Council on Environmental Quality sent a memorandum to the heads of all Federal agencies calling for an analysis of the impact of their actions on prime farmlands in the preparation of any Environmental Impact Statement. The memo also directed them to seek USDA help in defining and delineating prime agricultural lands.

The Department further revised its land use policy in 1976 and in 1978, when updates of Memorandum 1827 emphasized and clarified the Department's role in encouraging the retention of important farmlands.

The latest revision requests all Department agencies that administer grants, loans, regulations, or technical assistance programs to review their actions and make any changes necessary to minimize the reduction of prime agricultural lands.

It also says that the Department will participate—when invited—in the decisionmaking processes of other Federal agencies whose programs either cause or enable the conversion of important farmlands.

The Soil Conservation Service issued Land Inventory and Monitoring (LIM) Memorandum-3 in 1975. It not only defined prime and unique farmlands, but also established other categories of important farmlands which could be defined by State and local governments.

In addition, it inaugurated an inventory of these lands. Maps for 12 States and 512 counties have already been published, and work is underway for 577 more county maps. Maps of 1,300 high-priority counties—in regions undergoing rapid land use changes or containing rich coal reserves—will be completed by 1986.

The need for these maps is obvious: People have the right to know where their best agricultural lands are as they take steps to retain them. The maps also will aid in assessing the impact of Federal projects on these lands relating to agricultural productivity.

The General Accounting Office (GAO) believes that a national policy *would* be in the best interest of the country. In a 1979 report, "Preserving America's Farmland—A Goal the Federal Government Should Support," GAO recommended that Congress adopt such a policy, with goals as to the amount and type of land to be preserved.

The report said a national policy would strengthen the States'

interest in farmland protection and encourage them to aid local governments. It would focus public attention on the issue and increase cooperation between State and Federal agencies.

"Overall," the report said, "the States believe that the Federal role in retaining farmland should be to guide and help State and local government efforts, not control them. . . . There is a need . . . for Federal agencies to better assess the impacts of projects that are Federally financed, assisted, or otherwise controlled."

Another important activity for USDA is the Soil and Water Resources Conservation Act of 1977 (RCA). Under this act, nine USDA agencies and two White House offices evaluated the country's natural resources and the effectiveness of the Department's 34 soil and water conservation programs.

The outcome should be a comprehensive, consistent program for dealing with conservation problems. And it will reflect what the public wants.

During public participation efforts under RCA, the American people had an opportunity to speak out on soil and water conservation and related topics. Here is what they said about land use issues:

- More than half consider the loss of prime farmlands a serious problem.
- By 7 to 1, they believe that Federal action to protect farmland from soil erosion is a proper role of government.
- They consistently indicate a preference for allocating a greater share of scarce soil and water resources to agriculture, specifically food production.

The recently completed National Agricultural Lands Study can help us to understand better the whole land use issue. (See article below.) A joint effort of USDA, the Council on Environmental Quality, and 10 other Federal agencies, the study focused on:

- U.S. agricultural lands as a national and global resource;
- America's agricultural land base;
- Competing demands for U.S. agricultural lands;
- Market allocation of agricultural lands among competing uses;
- Agricultural land availability and the rural community;
- State and local actions affecting agricultural land availability; and
- Impacts of Federal programs and policies on agricultural land availability.

No Simple Solutions

There are no simple solutions to the land use problem. There is time to make a careful, measured effort that is workable and acceptable and respects the importance of local conditions and the people whose land will be directly affected. But the clock is running.

Land and water use should not be considered separately from other agricultural policies, such as those for research and exports. The question to be answered is: "Should this Nation retain good cropland for agriculture?"

Should urbanization be guided in a pattern that is not destructive to prime cropland, that contains soil erosion within the tolerance limits, and encourages local, State, and Federal governments to devise effective and coordinated programs for farmland retention? A legacy for the future should include the capacity to produce agricultural products for both domestic use and export.

Land is more than a store of basic wealth . . . a quarry to be mined for the products needed for survival, comfort, or pleasure. It is the living, dynamic bridge whereon plants convert solar energy to human food. It spans the gap between death and life, between what was and what is to be.

We have a body of information that tells what is happening to our land and water. We have a fair idea of what this country's agricultural needs will be for the next few decades. We have techniques and technology to retain and to improve our land.

It's a large and vital endeavor that concerns all of us. It's a matter of personal as well as national interest—leaving productive land to our children and our grandchildren is in the best interest of all of us.

National Agricultural Lands Study

In June 1979, the U.S. Department of Agriculture and the Council on Environmental Quality, with the support of 10 other Federal agencies, agreed to sponsor an interagency study of the availability of the Nation's agricultural lands, the extent and causes of their conversion to other uses, and ways in which these lands might be retained for agricultural purposes.

The NALS staff investigated seven primary areas:

1. Agricultural lands in national and international perspective;
2. America's agricultural land base;
3. Demands on agricultural land;
4. Allocation of agricultural land among competing demands;
5. Consequences on the infrastructure of U.S. agriculture when agricultural lands are converted to nonagricultural uses;
6. State and local actions affecting agricultural land availability for agricultural production; and
7. Influence of Federal programs on the availability of agricultural land.

According to the final report, the effects of agricultural land conversion have been felt locally, mainly in communities experiencing rapid growth; some citizens have grown concerned as they have seen their open spaces dwindle and the outlays for sewers, schools, and roads rise. State and local governments are experimenting with different means of keeping good agricultural land in farming.

From its research, NALS concluded that agricultural land is converted to other uses in an incremental piece-by-piece fashion. Many of the effects are local, but continued conversion of agricultural land at the current rate could have noteworthy implications. The cumulative loss of cropland, in conjunction with other stresses on the U.S. agricultural system, such as the growing demand for exports and rising energy costs, could seriously increase the economic and environmental costs of producing food and fiber in the United States during the next 20 years.

The study concluded that the Nation should, indeed, protect its important farmlands. Each acre not retained for use in agriculture and each acre exceeding the tolerance value in erosion loss removes flexibility for future decisions and reduces the Nation's options for directing its own destiny.

The study also states that there is no simple, one-shot solution to the problem. An effective solution will require a coordinated effort by local governments, States, and the Federal Government. The techniques could include:

- The Federal Government putting its own house in order. Of the 37 Federal agencies reviewed by NALS whose programs encourage the conversion of productive agricultural land, only USDA and the Environmental Protection Agency have explicit policies designed to consider the effect of their programs on agricultural lands. And even in these two agencies, some program sub-units have not yet incorporated agricultural land reviews into their regulations and guidelines.
- Recognition that most successful programs involve citizens in studying the situation and identifying problems and policy alternatives. Among the key ingredients of an effective agricultural land protection effort are farmer participation from the beginning, adequate technical and often financial support, strong local leadership, patience, and good timing—i.e., getting started *before* development pressures become too strong. Successful programs make agricultural land retention a part of a comprehensive growth management program, providing room for development on less productive agricultural land. Local programs need active State support because the effects of development often spill over township and county lines.

Federal action could address two separate problems with the estate tax. First, the use valuation provision for agricultural land could be revised. Second, on the administrative side, the Treasury Department could simplify estate tax provisions and clarify instructions and information to farmers, landowners, and tax advisors.

An overall review of the Federal Tax Code could be undertaken by the Departments of Treasury, Commerce, and Agriculture to determine the desirability and feasibility of offering positive incentives for retaining agricultural land in production.

The second major initiative could come in the area of supporting local and State efforts to develop agricultural protection programs by providing them with technical assistance, data, and where appropriate, financial backing.

All of these tools can be used in varying combinations under differing local situations. The State governments are seen as having a larger role in the process than they have had previously—both in assisting local governments and in establishing the regional perspective to determine the importance of the problem.

Single copies of the final report of the National Agricultural Lands Study are available from the Director, Land Use, USDA, Soil Conservation Service, P.O. Box 2890, Washington, D.C. 20013.

The Agricultural Land Situation: A Crisis in the Making

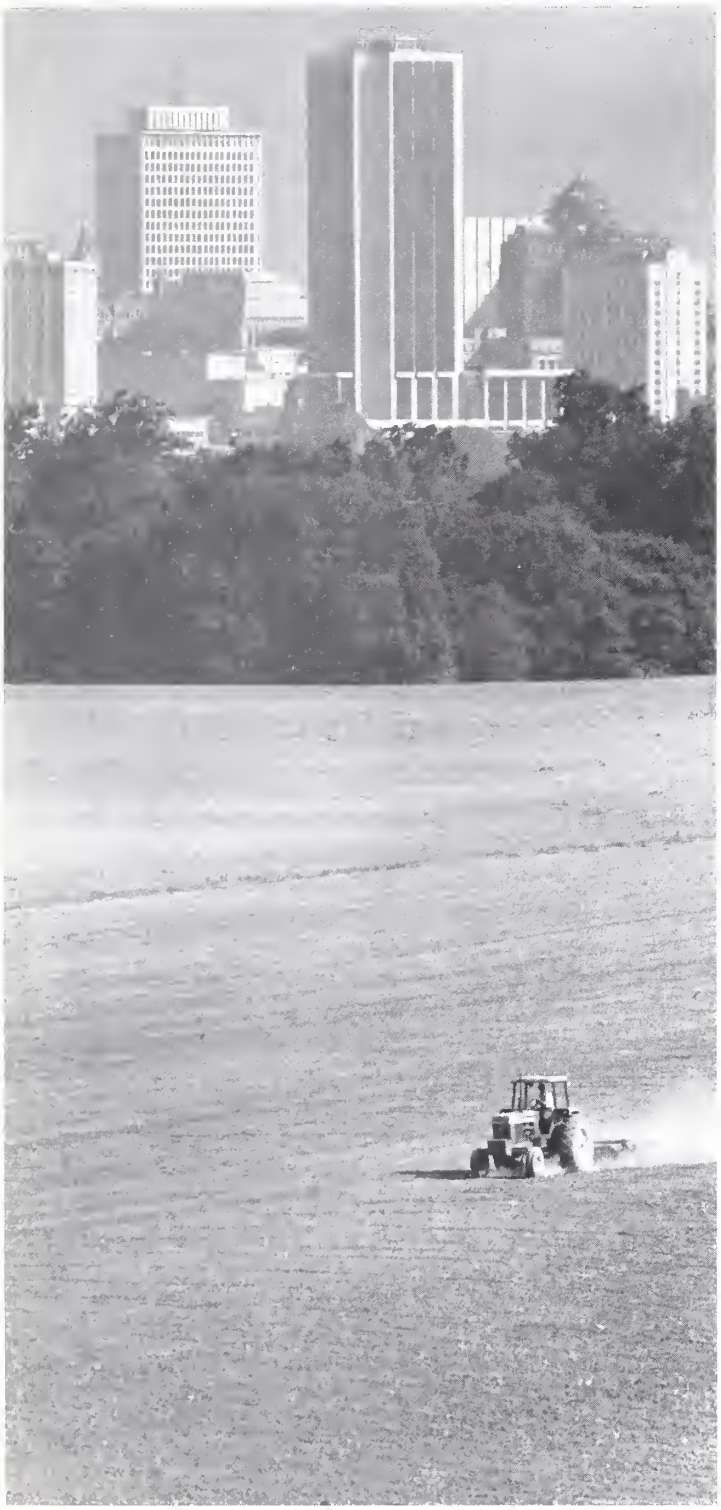

Photo by Tim McCabe, photographer, Information and Public Affairs, SCS, Washington, D.C.

Remarks by Secretary of Agriculture John R. Block before the National Agricultural Lands Conference, Chicago, Ill., February 10, 1981.

On Tuesday night, December 30, 35 folks from my home county—Knox County, Ill.—got together with two officials of the Illinois Department of Agriculture. The purpose of the session was to discuss the Agricultural Areas Act, a relatively new piece of State legislation and one of which I'm particularly proud.

Ron Darden and Chris Mosher explained the act's purpose: to protect Illinois farmland from development and from State and local pressure to shift land to other uses. They talked about its practicality, the fact that it's a basic tool to be used with county zoning laws. They emphasized the role of local government in protecting prime Illinois land and estimated the consequences of the continued annual loss of 100,000 acres of Illinois farmland to nonagricultural uses: fewer exports, higher food prices, and a reduced national balance of payments by the year 2000.

Perhaps most important, Ron and Chris stated for the people of Knox County the significance of the Agricultural Areas Act: the fact that for the first time it makes official, lays out in legislated black and white, State recognition of the value of farmland for agricultural purposes.

I don't recount our State experience to boast. We did what had to be done. I believe that those of us in Illinois government had an obligation to ourselves and to the people of this country to protect our land. And I believe that responsibility was mandated long before we passed legislation on July 1, 1980, by certain facts and figures that are as much a part of Illinois as the city of Chicago.

I tell you about our State experience because the contradictions in Illinois agriculture are what the National Agricultural Lands Study is about.

Eighty percent of Illinois cropland is prime land. That's a rich blessing, but it's also a tremendous responsibility. With that bountiful land, the State provides more than one-tenth of the Nation's food supply and over 17 percent of its exports. That means a continuing high level of dependence on Illinois by our own country which must look to agriculture to redeem an oil-heavy trade deficit and by other nations which face a growing gap between their ability to produce and their consumption demands.

Now weigh those obligations against the fact that Illinois each year is losing about 6.7 tons of soil per acre to erosion and the equivalent of 373 average-sized farms to farmland conversion. It becomes apparent that the increasing pressure on our best land and our decreasing ability to produce from prime land are pulling against each other.

We Americans are funny people. We're people of surplus. We consider it our heritage and our right. Yet in taking bounty for granted in our own lifetime, we may deny our children. We see no limits, recognize no boundaries.

As I see it, everyone involved in the National Agricultural Lands Study, everyone who will influence agricultural land policy in the coming decade, has three difficult, immediate, and top-priority responsibilities.

The first is to change the way Americans think about their land—to *make* them think about their land. R. Neil Sampson, of the National Association of Conservation Districts, calls for a new "land ethic."

All of the statistics, legislation, and studies mean nothing without a basic understanding that in the next 20 years we cannot realize a 60 to 85 percent increase in demand for U.S. agricultural products while urbanizing 3 million acres of productive land each year and maintaining current low productivity rates.

The second responsibility is to make Americans understand that the situation is a crisis in the making. The present agricultural land situation has been compared to the energy conservation issue of 10 years ago. Since 1973, we've increased our dependence on foreign oil by nearly 50 percent. Our foreign oil bill has increased thirty-fold in the last decade. But until gas lines wrapped three times around the block in the summer of 1979, the crisis wasn't immediate and Americans didn't take note.

The conversion of our agricultural lands is a potential crisis on several counts. To meet projected demands for the next 20 years, most of the Nation's 540-million-acre cropland base would have to be in cultivation. This would mean major shifts in the U.S. agricultural system: taking land away from forage and grazing uses, farming poor-quality land that is costly to cultivate and subject to erosion and environmental problems, and resulting higher food prices. The chain of problems would be lengthy and expensive.

The third responsibility is to convince the Nation that once we reach the crisis stage, there's no turning back. The effects of urbanization are irreversible. We won't be talking critical problems; we'll be talking fatalities.

The National Agricultural Lands Study has built a strong case for establishing a national policy for protecting good agricultural land. I support such a policy. I support wrapping up the studies now and taking action. And in this time of severe fiscal restraint, I also support the study's recommendation that State and local governments take the lead and Federal agencies lend support.

In discussing fiscal responsibility, the President talked about leaving our children liberty.

Liberty is really what we're talking about today. Liberty doesn't mean the freedom to squander resources and evade responsibility. It means taking on responsibility so that we have the freedom to make deliberate, conscious choices about our future.

The Agricultural Lands Issue: A National Perspective

by Howard C. Tankersley

The United States could find itself 112 million acres short of farmland by 2030.

According to studies made for the Soil and Water Resources Conservation Act of 1977, the United States will need 462 million acres of crops by the year 2030 to meet domestic and foreign demands for food and fiber.

But the United States needs crops for more than just food and fiber. With another 80 million acres of farmland, the Nation could produce enough alcohol from grain crops to meet 10 percent of the Nation's gasoline demand. With still another 60 million acres of farmland, the United States could grow plants like rubber that could be used to meet one-third to one-half of the Nation's demand for some currently imported industrial materials and manufactured products that are critical to the Nation's defense and some that are essential to industry.

The need for gasohol and domestically grown materials to replace some industrial imports increases the 462 million acres of farmland needed by 2030, for food and fiber, to 602 million acres to meet all of these needs.

The United States has more than 540 million acres of potential farmland today. Subtract the 50 million acres of today's farmland that may be converted to nonfarm use by 2030 and the Nation may have only 490 million acres of potential farmland in 2030—112 million acres short of the 602 million acres needed.

Debate over whether to stop the conversion of farmland to nonfarm uses has focused on this potential shortage and whether it actually exists, as though it were the only concern in the farmland-retention issue. There are at least three other concerns: the costs of farming less suitable land, urban sprawl, and individual versus public rights in land use control.

Farming less suitable land will require more fuel, more irrigation, more labor, and more chemicals than production on today's farmland. Farming less suitable land will also mean increased soil erosion, increased stream siltation and degradation of surface waters, continued mining of underground water, and increased costs for dredging and other means of lessening the effects of stream siltation.

Farming less suitable land might not be necessary if cities become more compact. The "Compact Cities" report, issued by a congressional subcommittee in 1980, recommends that urban sprawl be stopped because it is "sapping the vitality of large and small cities, devouring farmland at a dangerous rate, and wasting energy at every turn." The report also says that it is not necessary to use farmland for urban expansion, since 22 to 25 percent of all privately owned land is vacant in the large cities. The Nation could use this land, building modern buildings like condominiums that use space efficiently, to provide housing for nearly double the current population without expanding beyond current city boundaries.

Urban sprawl is bringing pressures for more public control of land use in areas outside of cities. The right of private landowners to convert farmland may have to be balanced against the right of the public to have adequate food, water, clothing, fuel, security, and a healthy environment.

All these concerns must be considered in the debate over the conversion of today's farmland to nonfarm use. How well the Nation's farmlands serve the needs of Americans and the world in the future depends largely on how Americans treat farmlands today.

Howard C. Tankersley,
director of land use, State and Local Operations, SCS, Washington, D.C.

SCS Helps Land Use Planners

The Soil Conservation Service, through conservation districts, helps communities make land use decisions that will protect their land, water, and related resources.

Soil surveys provide the technical data for most SCS recommendations to land use planners. The surveys provide information on the potential and limitations of soils for various uses. They help land use planners determine which land is best for farming, which land is most suitable for urban expansion, and which should be preserved for wildlife and recreation.

With the help of State agricultural experiment stations and other Federal and State agencies, SCS has published soil surveys for about half of the counties in the Nation to date, and plans to have the entire Nation mapped by 1997.

In addition to soil surveys, by 1986 SCS will publish maps showing Important Farmlands in 1,300

high-priority counties, in regions with rapid land use changes or with rich coal reserves. SCS has already published maps of Important Farmlands in 12 States and more than 500 counties. SCS is identifying prime and unique farmlands and farmlands of statewide and local importance so county and State officials will know where their best farmlands are and take steps to retain them.

SCS does not just hand maps to these officials but helps them develop methods to use them. One way SCS does this is by working with these officials to develop land rating systems to protect farmland with a preferential tax rate.

Besides helping to identify and protect farmland, the soil surveys can help planners decide where to build streets, roads, bridges, buildings, and sewage disposal sites. Sewage disposal is a major problem for planners that soil surveys can help solve. Septic tanks require a soil that will allow the liquid wastes to filter through the soil rather than come to the surface. If the soil is not suitable for septic tanks, community planners can ask a developer to install a central sewage system instead of septic tanks. A good site for the solid wastes of landfills would have a very slowly permeable soil that would prevent the decomposed solid wastes from polluting the groundwater and wells in the area. Soil surveys can also identify soils that are not stable enough to support a house, or that have a high water table that will flood basements.

SCS also helps State and local governments develop regulations for subdivisions, and other local erosion and sediment control regulations. These regulations can become part of a local land use policy that will preserve areas like flood plains, wetlands, and streams for wildlife and recreation. These regulations, and a land use policy, can help communities control flooding and avoid failures in houses and other structures.

Controlling erosion, sediment, and flooding are some of the benefits of local land use policies that will help assure the best use of the Nation's land and water resources.

Donald L. Comis,
assistant editor, *Soil and Water Conservation News*, SCS, Washington, D.C.

Land Rating System Being Developed

The Soil Conservation Service is developing a national land rating system to help regional and local planners determine the agricultural viability and value of land for taxing and to assist in land use planning.

All States, except Georgia and Mississippi, provide a preferential tax assessment for farmland, usually based on land capability and/or productivity. SCS will also base its model land rating system on capability, productivity, and Important Farmland.

In addition to helping planners determine tax assessment on farmland, the new system will help planners develop soil potential ratings for vacant lands in urban areas. SCS hopes the system will encourage communities to develop suitable existing vacant urban land and protect farmland, forest land, wetlands, and flood plains.

SCS plans to rate all lands for both farm and urban suitability to help planners decide whether to convert farmland to nonfarm use.

Donald L. Comis,
assistant editor, *Soil and Water Conservation News*, SCS, Washington, D.C.

Illinois Government Moves to Protect Farmland

The Governor of Illinois has issued an executive order requiring capital development agencies to prepare agricultural land preservation policies. The order requires eight State agencies and the Illinois Commerce Commission to develop their own agricultural land preservation policies by July 22, 1981, and to implement these policies by July 22, 1982.

According to a State Department of Agriculture official, about 100,000 acres of Illinois farmland were converted to nonagricultural uses in 1979, including 66,000 acres of prime agricultural land. About 10 percent of the land directly converted to other capital uses is a result of direct government activities.

The executive order states that the Illinois Government will protect "the State's prime agricultural land from irreversible conversion to uses which result in its loss as an environmental or essential food production resource," through the administration's programs and regulations.

The Illinois Department of Agriculture will lead implementation of the policies.

State and Local Efforts to Protect Farmland

Today, nearly every State and numerous counties and municipalities have adopted some kind of farmland preservation program. The most successful programs began simply, by involving citizens in studying the situation to identify the problems and the policy alternatives. Many experts agree that it is essential to the success of a farmland preservation program that farmers and other citizens participate from the beginning. In addition, programs need to be tailored to meet specific local or State needs.

The following are examples of what some States and counties have done to reduce the loss of farmland.

New York

New York State has an agricultural districts law that protects farmers from harassment, exempts them from special tax assessments for water and sewer services they do not use, gives them preferential property tax treatment, and discourages residential development in agricultural areas by restricting government subsidies to development. New York's agricultural district program is the oldest and perhaps the most widely used in the Nation.

Maryland

In addition to Maryland's statewide agricultural preservation program, several counties have their own program, one of which is Montgomery County.

Montgomery County combines the transfer of development rights (TDR) with a development rights "bank." TDR creates a "white market" in development rights by restrictively zoning agricultural areas and allowing development at greater densities in selected urban areas, if developers purchase density credits—or development rights—from farm owners. Farmers are thus compensated for restrictions on development of farmland at no direct public cost. TDR has been tried in a few other communities with disappointing results—few actual transfers have occurred—and Montgomery seeks to remedy this deficiency by extending credit to developers for the purchase of development rights and, as a last resort, directly acquiring and banking the rights for resale.

Wisconsin

The Wisconsin program, adopted in 1977, gives farmers the benefit of a State income tax credit (and protection from special tax assessments for municipal services). The credit varies with farm income—it increases up to $4,200 annually, as income decreases—and serves as an "insurance policy" against crop failure or other factors that otherwise could financially cripple farm families. Unlike the property tax break used by some other States, the Wisconsin income tax credit does not cut into local revenues.

To qualify for the income tax credit, the farmer and the local community must take a number of actions. Until 1982, the end of the first phase of the program, farmers may qualify for the credit if they either contract with the State to keep their land in agricultural use, or their land is zoned exclusively for agriculture by local government. After 1982, counties must either adopt exclusive agricultural zoning programs or, in the case of predominantly rural counties with less than 75,000 inhabitants, prepare farmland preservation plans as a less stringent alternative to zoning.

Unless counties take these steps—the State helps them by providing technical assistance—farmers cannot qualify for the tax credit simply by signing contracts to hold their land off the development market. If a contract between the farmer and State expires, and is not renewed either because of personal preference or the failure of local government to act, the accumulated income tax credits must be repaid completely or in part.

Illinois

The Agricultural Areas Conservation and Protection Act became effective on July 1, 1980. To set up an agricultural area, any landowner or group of landowners may submit a proposal to the county board of the county in which the land is located. The proposed area must be at least 500 acres and must be as compact and contiguous as possible.

The act aims to protect farmland against development, as well as against State or local government actions that might pressure a farmer into shifting the land to other uses.

After a proposal is turned in and an agricultural areas committee is formed, public notice of the proposal must be published. During the next 30 days, landowners who own land that is adjacent to or partially encompassed by the proposed area can suggest modifications.

Also, if the proposed area includes land that is within 1½ miles of the corporate limits of any municipality, the county board

must notify municipal authorities. The municipality has 30 days to file an objection.

After the 30-day period, the proposal and proposed modifications are submitted to the county agricultural areas committee and a public hearing is held.

The county board must act on the proposal within 45 days after the proposal was submitted. The county board decision is final.

An agricultural area is established for a 10-year period and then is re-evaluated. Not only may landowners petition to have the area dissolved after 10 years, but any person may also petition to have land withdrawn from the agricultural area during the 10-year period.

Assessment of levies for public benefits such as sewer and water cannot be imposed on farmland on the basis of frontage, acreage, or value except if the assessment of levies were imposed before the agricultural area was formed or if the public service is provided to the landowner on the same basis as others receiving the service.

Illinois Cooperative Extension Service,
Urbana, Ill.

Minnesota

The Minnesota State Legislature passed a law creating agricultural preserves to protect farmland in the Minneapolis-St. Paul metropolitan area. The area covers seven counties and 2,480 square miles.

Participation is optional, but those who decide to enroll their farms will receive a package of benefits intended to keep the land in agriculture. Not participating doesn't necessarily mean that farmers can sell their land for development, though. Farms that are eligible are in areas that are zoned for long-term agriculture, which means that only one house is allowed per 40 acres.

As the owner of an agricultural preserve, a farmer receives several benefits including:

- Assurance that the farm will be taxed as agricultural land only, and that added values resulting from urban, nonagricultural factors will not be considered.
- A tax rate no more than 5 percent higher than the State average for farmland.
- Protection from special assessments, such as sewer and water systems.
- Assurance that there will be no local ordinances restricting normal farm practices or structures.
- Protection from eminent domain actions for projects such as powerlines, roads, and other projects which would cause an unreasonable interference with agriculture.
- Assurance that the farm will not be annexed by a city unless certain findings are made.

Once farmers enroll their land in the program, it carries the agricultural preserve designation indefinitely. The law requires an 8-year notice for either party to cancel the agreement. The farm can be sold, but the preserve designation stays with the property, much like an easement.

Before a unit of government can cancel a landowner's agricultural preserve agreement, however, it must first have amended its comprehensive plan so that the area would no longer be zoned for long-term agriculture.

To help assure good resource management in the area, the law gives the local soil and water conservation district the opportunity to review applications for agricultural preserves. Also, if a complaint is received about soil erosion on an agricultural preserve, the conservation district is to determine how bad the soil loss on the farm is and make recommendations for controlling the erosion. The local unit of government that has the planning and zoning authority over the area can then ask the owner to use the technical and financial assistance of soil conservation programs to correct the problem. If the erosion problem is not corrected within a year, the local unit of government can fine the owner up to $1,000.

The State legislature is now looking at ways to adopt the agricultural preserves concept into statewide farmland protection.

Tom Gahm,
public information officer,
SCS, St. Paul, Minn.

Washington

King County is the largest metropolitan county in Washington, with more than one-third of the State's population. A steady increase in population along with rapid industrial growth has increased the demand for residential and commercial sites. The demand has been so great that the county's prime agricultural land base has declined at a rate of approximately 3,000 acres annually since 1949. Attempts to save these lands through zoning proved ineffective due primarily to incorporation by adjacent cities eager to expand their tax base.

Out of the 156,000 acres of prime farmland King County had in 1949, only 55,000 acres remain. Despite the declining land base, agriculture in the county remains a healthy $40 million-a-year industry,

providing more than 6,000 full-time and about 1,400 part-time jobs.

Under King County's land preservation program, the county was divided into agricultural districts. Eligible lands within each district were given priorities with the first priority being those lands most threatened by urban development. A total of some 40,000 acres was identified as eligible and placed in either the first, second, or third priority.

In 1979, 64 percent of the county's voters approved a referendum to tax themselves $50 million for the purpose of underwriting a bond issue that will be used to purchase "development rights" to farmland. Development rights are rights to use the land for any purpose other than farming or open space. The development rights are only a part of the owners' total property rights. Once the development rights are sold, the owners would still retain possession of the land—they could sell the land or transfer ownership to their children; but regardless of ownership, that land would be required to remain in farming or open space.

Joseph W. Henry,
district conservationist, SCS,
Renton, Wash.

California

Tulare County, located in south-central California, is the third largest agricultural producer in the Nation, with farm products contributing about $700 million annually to the local economy. Its land and climate are ideal for growing specialty crops that cannot easily be produced elsewhere. During the period from 1964 through 1969, Tulare County experienced the loss of 66,000 acres of its farmland, mostly to suburban "ranchettes" and small lot development scattered through the countryside.

Tulare has adopted an agricultural zoning program that establishes different minimum lot sizes, ranging from 20 to 80 acres, designed to protect agricultural operations that require different size farms to be profitable. Development is concentrated in those parts of the county, generally adjacent to its existing municipalities, where agricultural districts have not been established by the county under California State law.

The Tulare program uses a system of suitability points to determine where residential development is appropriate. For example, if a building site has superior agricultural soils, it qualifies for four points; if the building lot is too large and would take more farmland out of production than necessary, another four points can be added; if the surrounding lands are used for productive agriculture, three points may be tacked on; or if the building site is far from public services such as county roads and fire stations, add another point or two. In all, Tulare evaluates development on the basis of 15 categories, each of which carries suitability points. If a proposed development accumulates too many points, it is disapproved.

This system is flexible like traditional zoning, but it has the advantage of providing detailed criteria—the suitability points—for determining when the character of an area has substantially changed from agricultural to residential, so as to allow what is in effect a change in zoning. The Tulare zoning program is based on a comprehensive plan that includes an agricultural lands component, and thus far seems to have been successful, since its adoption in 1975, in encouraging development close to existing urban centers, while preventing the premature subdivision and conversion of a large expanse of prime farmland.

Iowa

The Black Hawk County program is based on a detailed method of rating soils according to their agricultural productivity. The system is geared to the "corn suitability rating" (CSR), which is included in the Soil Conservation Service soil survey for the county. Soils rated with a CSR of 70 and above—soils that produce roughly 115 bushels or more of corn per acre—are dedicated to exclusive agricultural use. In those areas where the soil is less productive—about 30 percent of the total area of the county—development is guided toward buildable soils that are suitable for septic systems. In agricultural areas that are not zoned exclusively for this purpose, development can take place on lots that are a minimum of 3 acres, if 75 percent of the lot consists of buildable soils.

Pennsylvania

Since the turn of the century, half of Pennsylvania's farmland has been lost to food production. The annual loss continues at 128,000 acres; and if the conversion continues at the present rate, an additional 23 percent of its remaining prime farmland will be lost in less than a generation.

Agriculture is the second leading industry in this highly industrialized and heavily populated State. The farm and food industry gener-

ates $20 billion annually and supports 900,000 workers, assuring a continuous supply of fresh milk and other wholesome locally produced food products. The importance of agriculture in Pennsylvania will continue to spiral as the transportation costs of food make locally grown products more competitive with domestic imports.

During the past decade, 10 acts addressing farmland conversion problems have been passed in the Commonwealth. They range from providing preferential assessment, purchase of easements, and deed restrictions to modifying the inheritance tax and exempting family farm corporations from the capital stock franchise tax.

The enacted legislation requires the use of available land use information in implementation procedures. The preferential assessment act's land values are derived from Soil Conservation Service soil survey land use classes.

The State legislature has created an Agricultural Lands Condemnation Board. Before condemning any productive agricultural lands for highways, waste disposal, or airport facilities, the involved State agency must appeal to the board. The board must determine, within 60 days, that there is no "reasonable or prudent alternative. . . ."

The State planning code has been amended to permit municipalities to develop zoning ordinances to preserve farmland considering topography, soil type and classification, and present use.

Currently, the Commonwealth is considering legislation which would enable farmers to form agricultural districts, and a right-to-farm bill which would place certain restrictions on the enactment of

nuisance ordinances inhibiting farm operations. Both of these initiatives would be important components of a State strategy to slow down the conversion of farmland in the Commonwealth.

Strong interest in farmland retention is now developing at the county and township levels of government. Local land use plans are recognizing the need to identify areas suitable for agriculture. In some areas, farmers have requested local planning boards to zone their land for agriculture.

SCS soil survey information serves as a base for local land use planning and in designating the permitted uses in an area zoned for agriculture.

In Lancaster County, the leading agricultural county in the State, a unique attempt to retain farmland by purchase and resale of land with deed restrictions is nearing the implementation stage. Under this proposal, the townships would establish agricultural areas where farmers would be required to provide the county with the first option to buy farmland offered for sale. Land purchased by the county would then be offered for sale with a deed restricting use of the land to agriculture.

Most conservationists agree that retaining land in agriculture is a challenge worth the effort. However, designing a strategy to achieve this purpose is, at best, difficult. In Pennsylvania, we have found that no single effort alone can address the farmland conversion issues. All available mechanisms should be considered and new ones designed to halt the loss of the State's most basic resource—the land, which has served as the backbone of our family farms, our economy, and the well-being of all Pennsylvanians for nearly three centuries.

Charles Slaton,
program analyst, Pennsylvania Department of Agriculture, Harrisburg, Pa.

Unless otherwise indicated, the information on programs in this article is from "Disappearing Farmlands," second edition, published by the National Association of Counties Research Foundation, August 1980.

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Meetings

May	4-7	Garden Club of America, Cincinnati, Ohio
	11-14	League of Women Voters of the United States, Washington, D.C.
	17-21	American Institute of Architects, Minneapolis, Minn.
	25-29	American Geophysical Union, Baltimore, Md.
	26-29	Agricultural Management and Water Quality, Ames, Iowa
	27-29	Southern Forestry Conference, Williamsburg, Va.
June	7-11	General Federation of Women's Clubs, Cedar Rapids, Iowa
	7-12	American Water Works Association, St. Louis, Mo.
	14-18	Outdoor Writers Association of America, Louisville, Ky.
	21-24	American Society of Agricultural Engineers, Orlando, Fla.
	21-25	Forest Products Research Society, St. Paul, Minn.
	22-26	Air Pollution Control Association, Philadelphia, Pa.
	28-July 2	American Seed Trade Association, Atlanta, Ga.
	28-July 3	National Environmental Health Association, Phoenix, Ariz.
July	3-6	National Audubon Society, Estes Park, Colo.
	15-18	The Izaak Walton League of America, Inc., Syracuse, N.Y.
	18-22	American Association of Nurserymen, Inc., Cincinnati, Ohio
	26-29	American Agricultural Economics Association, Clemson, S.C.
	26-30	National Federation of Business and Professional Women's Clubs, Inc., San Francisco, Calif.
	27-30	International Symposium on Urban Hydrology, Hydraulics, and Sediment Control, Lexington, Ky.

New Publications

Disappearing Farmlands

by the National Association of Counties Research Foundation

Single copies are available from the National Association of Counties Research Foundation, 1735 New York Ave., N.W., Washington, D.C. 20006.

Farming in the Shadow of Suburbia

by Edward Thompson, Jr.

Single copies are available from the National Association of Counties Research Foundation (address above).

Land Use: Ongoing Developments in the North Central Region

by William A. Huemoeller, Kenneth J. Nicol, Earl O. Heady, and Brent W. Spaulding

This is an investigation of land use issues in the North Central Region of the United States, by the Center for Agricultural and Rural Development at Iowa State University. The first phase of the investigation describes the history of land use in this region, the second phase considers the legal options available for the future, and the last phase projects six policy options to the year 2000 and evaluates them compared to a base projection of current land use trends in this region. The study uses a national land use computer model.

A limited number of single copies is available from the North Central Regional Center for Rural Development, 108 Curtiss Hall, Iowa State University, Ames, Iowa 50011.

The Federal Dynamic in Land Use

by Philip M. Raup

Available for $4 from the National Planning Association, 1606 New Hampshire Ave., N.W., Washington, D.C. 20009.

Recent Soil Surveys Published

by the Soil Conservation Service

Arizona: Yuma Wellton County Area.
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Colorado: Larimer County Area.
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Idaho: Madison County Area.
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Kentucky: Union and Webster Counties.
New Mexico: San Juan County and San Miguel County.
Ohio: Cuyahoga County.
Oregon: Hood River County Area.
South Dakota: Sanborn County.
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Texas: Brown and Mills Counties.

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